

Inductively Coupled Plasma- Mass Spectrometer (ICP-MS)



Make: Thermo Fisher Scientific

Model: iCAP Qc

Equipment Specification

1. Sample Introduction

- Peristaltic Pump: Compact, low pulsation, 12 roller, 4 channel mini-pump with metal free rollers
- Nebulizer: High performance, concentric nebulizers) with ~0.4mL/min sample consumption
- Spraychamber: High purity quartz, low-volume, baffled cyclonic spray chamber
- Peltier Cooler: Water cooled peltier cooling of the spray chamber (-10° to +20°C, assuming coolant water at 18 °C) for optimum stability during the analysis of aqueous and organic sample types

2. Plasma

- RF Generator: Argon ICP ion source with digital, solid state RF generator with dynamic frequency impedance matching to the plasma at ~27 MHz. Standard operation at 1550 W for a robust plasma and optimum sample decomposition
- Load Coil: Silver coated copper load coil (water cooled)
- Torch and Torch Holder: Push-in, demountable single piece quartz torch with connection free gas supply
- Injector: 2.5 mm ID (internal diameter) quartz
- Plasma TV: Remote monitoring of plasma status via camera
- Gas Control: Coolant, auxiliary and nebulizer gas are controlled by mass flow controllers as standard

3. Interface

- Sample Cone: Field proven 1.1 mm diameter orifice for minimal deposition
- Skimmer Cone: Narrow 0.5 mm orifice
- Interface Pump: External, high performance pump to provide backing to the turbo pumps and evacuation of the expansion region for improved sampling from the plasma
- Extraction Lens: Single extraction lens operated at low voltages for optimum ion extraction and focusing before entry into the RAPID lens.

4. Ion Optics

- 90 ° ion optics system
- background noise < 1cps in all modes

5. QCell

- Proprietary flatpole rod system acts as an ion guide in non-gas mode while in He KED mode it provides powerful interference reduction for a clearer mass spectrum in all sample types. Unique design allows low mass ions to pass through the cell in He KED mode, enabling detection of Li, Be and B.

6. Quadrupol

- Virtual hyperbolic field rods, driven by a solid state, 2 MHz supply ensures low abundance sensitivity (< 0.5 ppm at m-1 (m= 238 U)

7. Detector

- Simultaneous analog/pulse counting over 4 orders of magnitude for improved reliability. Dwell times of 100 μ s in both detection modes.
- Linear dynamic detection range: > 9 orders of magnitude (< 1 - > 1·10⁹ cps) accurately measures traces to major matrix ions in a single scan

8. Vacuum System

- Three stage pumping with split-flow turbo pump.